CARANA CORPORATION

Information Technology Enabled Services (ITES) - Bangladesh

HUMAN CAPACITY DEVELOPMENT (HCD)

Author Carl Miller
CARANA Corporation

Date April 2002
Owner Group USAID

Distribution

TABLE OF CONTENTS

1 EXECUTIVE OVERVIEW

1.1 General

This project deliverable assesses human capacity development (HCD) capacity and existing constraints and proposes strategies to reduce or eliminate the constraint. It provides an overview of the existing HCD and makes recommendations. This report satisfies the Information and Communications Technology (ICT) Terms of Reference for the Human Capacity Development Scope of Work (SOW):

The role of the Human Capacity Development (HCD) Specialist will be to evaluate the current status, capacity, and potential of the education and training in ICT related skills and knowledge in Bangladesh, particularly in relation to the key competitive success factors identified through the survey and external market research.

1.2 Major Findings

- Existing Human Resources (HR) capacity is sufficient for current needs with a few exceptions involving high-level skill and expertise.
- In comparison to the Philippines the supply of skilled labour is relatively low
- There are identified challenges to ramping up to a large volume of human resources
- In comparison to other competitor nations, the Bangladesh HR sector lacks sufficient international standards benchmarks to demonstrate the existence of a fully qualified workforce to the external market. This is as much a marketing issue as a human resources issue as the product involves skilled HR.
- While some private sector / educational institution partnerships involving work placements were found; more emphasis in this area is needed to produce a fully qualified workforce.
- A gap exists in low-end training (key boarding, transcription, data entry) but there is currently a limited demand for such services. Additionally a ramp up of this type of training is not seen as a bottleneck i.e. easily developed training, abundance of qualified instructors for low-end job skills.
- No training and educational professional organization or association exists. This may be beneficial in raising the quality of education and providing opportunities for upgrading of instructors. Such an Association could provide some self-regulating standards, advice for consumers, or public awareness campaigns.
- Many ICT training organizations are using curriculum developed elsewhere (India, USA, U.K.) thus providing some measure of international credibility. The quality of the instructors and the instruction remain an elusive element to determine.
- A number of organizations provide training as part of their business – a high degree of vertical integration because the level of business is small. This requires firms to have a scattered focus. It is often the norm in an evolving sector that there are many entrants offering a variety of services. As the sector matures, typically organizations consolidate and businesses focus on their core

competency and niche market. This helps increase both quality and efficiency. Bangladesh is still at the early stages of sector development.

- Issue of consumer protection for the multitude of training institutes is continually raised by a variety of stake holders. There are two schools of thought: Gov't regulation or let the market determine. With a few caveats and suggestions for implementation this report recommends allowing market forces to weed out the poor performers.
- The efforts of the IT task force to estimate HR capacity versus demand by job category is commendable. Such an analysis is critical, and the views and input of the private sector need to be referenced on an ongoing basis as demands shift. While the targeted demand is only an estimate (goal) it is never the less important to make such HR demand estimates versus various target levels.
- There is a gap evident in the expectations of those entering ICT training institutions and the reality of the jo b market. One ICT training organization reported a job placement rate of only 1 in 6. Students surveyed overwhelmingly suggested their motivation was to get employment abroad.
- TechBangla efforts to utilize NRB to provide seminars to Bangladesh business people is worthwhile although the number of seminars/trainings is relatively small.
- Efforts to explore distance learning and on-line training is in its infancy here. This is in part due to the lack of ubiquitous broadband infrastructure. formulated.
- A compare and contrast exercise with the Philippines provides several illustrative examples for action items. It also illustrates that many problems faced by Bangladesh are also evident elsewhere (poor funding for education, lack of qualified faculty, quality standards in growing private ICT training institutes.

1.3 Major Constraints

The major constraints to HCD growth in the targeted areas (lower and mid range skill level) are:

- Lack of qualified instructors
- Inadequate telecommunications infrastructure for high teledensity and internet accessibility to build basic computer literacy and distance learning applications.
- Need for improvement in computer labs and other educational infrastructure (broadband internet applications etc.)
- Primary/secondary education programs for future generations

2 HUMAN RESOURCES – EXISTING CAPACITY

2.1 General

The analysis of existing capacity indicates that basic education (literacy, primary /secondary education) and access to ICT infrastructure are significant barriers to joining the ICTES workforce. It is difficult to imagine a skilled ICTES workforce without the basic education to utilise ICT and access to the very ICT infrastructure on which those services depend.

2.2 Base Level

Virtually all countries with a strong IS/IT and ITES sectors also have a primary and secondary school education system which recognizes the importance of educational opportunities starting at the primary level. An analysis of literacy rates, computer literacy rates indicate that Bangladesh faces a significant challenge.

Indicator	Bangladesh
Population	130 million
Literacy rate	51.3%
Teledensity	.5%
Internet penetration*	.2% -.4% est.
Computer literacy	Unknown –but number will be very low
Secondary school enrolment	6 million
Sec. school SSC exam pass rate	52 % (1997)
Teacher-student ratio -primary	1:69
Teacher-student ratio secondary	1:38
Operating expenses /student	554 Tk (approx. $10USD/student)
Computer lab equipped schools	Unknown but assumed to be low
Computer literacy curriculum	Not in evidence

* sources: ITU Telecom Asia, Bangladesh presentation, private sector est. based on paying intent subscribers

2.3 Universities and Technical Institutes

There are 11 Public Universities with an estimated 2001 intake enrolment of 1630 students. This includes National University with 20 colleges and BITs of which there are 4. In addition there are 16 private Universities with an estimated intake enrolment of 2370 students. There are 28 Polytechnic Institutes (both public and private) with enrolment of approximately 1100.

Institution	2001 Enrolment *
Public Universities	1630
Private Universities	2370
Polytechnics	1120
Total	5,120

* source ; preliminary draft of the ICT Task Force Report

The 2001 enrolment is therefore estimated at approximately 5000 students from Public and Private Universities and Polytechnics.

2.4 Training Institutes

There exists a large number of privately run training institutes. An estimated 10K students are enrolled in these institutions. Some are franchise operations with a parent organization in the UK, USA, Canada, India, Australia and elsewhere. These franchisees have access to a curriculum developed and maintained elsewhere. There is little uniformity in standards as the quality of instruction and facilities is unknown. Institutes not associated with a parent organization provide curriculum developed by themselves.

Additionally some institutes provide international vendor certification such as Microsoft, Cisco and Oracle. Such certification requires the passing of an internationally recognized examination and carries a degree of credibility with it. Some institutes offer lower end training in Microsoft Word etc.

Training Institutes are the subject of some criticism due to the lack of standards in curriculum, instruction and results.

2.5 On Job Training by private sector

The need for on the job training should not to be viewed as a deficiency in the education sector. The international standard for on the job training for new hires is 3-6 months. In addition virtually all multi-nationals invest significantly in upgrading of skills in a variety of areas for existing employees in order to keep them current. This is the case in Bangladesh. The private sector is well positioned to determine its own needs and provide the necessary on the job training relevant to its own business.

As discussed later there may well be a gap in the types of ICT professionals produced by training institutes. It has been pointed out that at the high level – systems architects etc. there is a shortage. Indeed some training institutes and Universities have pointed to the lack of qualified trainers to be able to offer the courses needed.

2.6 Current capacity

Despite limitations at the primary/secondary education level there still exists a pool of resources trained in ICT related fields.

Preliminary estimates from the ICIT Task Force indicate that approximately 5000 IT professionals exist in the country. The ICIT task force points out that most have degrees in fields other than ICT and have taken ICT training through a variety of methods including on the job training. The growth in interest in ICT and indeed the expectations of students that ICT training will produce economic benefits has led to a rise in enrolment in training institutions of all kinds.

In summary:

	Current enrollment	existing
Existing Professionals		5000
University/ Polytechnic	5120	
Franchised Training Institutes	5000	
Non-franchised Institutes	5000	

Source: Preliminary estimate of the ICT Task Force

2.7 Skill Level

It is helpful to look at capacity and its potential for development in three categories. High end (systems analysts, software architects, project managers etc.); middle tier (s/w programmers, specialized animation and CAD applications) and Low end – (data transcription, data entry, low end animation).

Human Resources skill level	**Current capacity**	**Future Capacity (assuming export targets reached)**
High end	Minor shortfall	Major shortfall - Action required
Middle tier	Adequate	Adequate Capacity – increase in line with demand
Low end	Minor shortfall	Can be ramped up with minimal effort

It should be noted that the focus of the current market analysis is on the middle and lower tiers. Although some S/W development in Bangladesh will of necessity require some skilled resources at the higher level.

2.8 Conclusion

There exists a pool of 5000 trained human resources with approximately an additional 5000 per year enrolled in University level training. The ICT Task force is recommending an increase in enrolment rates. Additionally they have rightly attempted to categorize the skill level and quantities required given an assumed target level of ICTES export.

The private sector reports that there are many more qualified applicants than jobs. A typical response rate is 100 applicants with perhaps 10-15 fully qualified for each position. It has also been identified by the private sector that there are insufficient resources in some skill areas (high end) i.e. project management, systems architects, software testers.

The education system struggles to upgrade computer skills but is challenged by the lack of qualified staff, adequate facilities and low funding.

3 INTERNATIONAL COMPARISONS

3.1 General

The Philippines was selected as a competitor nation to provide some comparisons because it is a developing nation targeting the same ITES enabled quadrant of services as Bangladesh. Other nations were examined as well looking various ranking indices supplied by the META Group, PERC, UNDP etc. It should be noted that on many rankings Bangladesh is not ranked as it is not near its rivals. The following indicators provide some basis for comparison and may be helpful in setting targets.

3.2 Quantity

Country	ICT enrolment/yr.	Trained professionals
Bangladesh	5K	5K
Philippines	20K	unknown
India	68K	2.8M

Source: NASCOM study, Philippines National Economic Development Authority, Bangladesh ICT Task Force preliminary draft estimates.

It is of course not just numbers of workers but rather the type of skill and the availability of jobs in the field that are important. The Philippines employ large numbers of workers in labour intensive call centers and data entry/transcription services.

3.3 Quality

In a competitive market the market place seeks to find a demonstration of the skills of the work force. As the degrees offered by one institution may not be comparable to

another an external measure is sought by those not in the 'developed nation ' category.

Such external measures are:

- Results on internationally recognized examinations (i.e. Japanese IT exam)
- Proven on job experience with graduates
- Success stories
- Certification through internationally recognized programs (i.e. MicroSoft, Oracle certification)
- TOEFL scores for English proficiency
- Credibility (experience and expertise) of Faculty
- Results of consultancy comparative analysis (Gartner Group, PERC)
- Results of 'perception' surveys

Some interesting comparisons illustrate where Bangladesh stands with respect to other nations. The challenges section also shows that its challenges are not unique to Bangladesh. In particular these problems associated with brain drain and recruitment and retention of qualified instructors appear problematic to many developing nations.

a) Education Rankings:

Bangladesh does not make even the bottom tier of the rankings

Country	**Ranking**
South Korea	1
Singapore	2
Japan	3
Taiwan	4
India	5
China	6
Malaysia	7
Hong Kong	8
India	9

Political and Economic Risk Consultancy (PERC) rankings for Asia: The criteria for this assessment included quality of local education, cost of production labor, availability of production labor, cost and availability of highly qualified staff, proficiency in English, and overall skill of the labor force. Though China and India were not rated high, they both have massive pools of skilled manpower, which have endowed them with potentials of becoming formidable rivals. According to Political and Economic Risk Consultancy (PERC) all the prosperous countries of Asia have heavily invested in education which chiefly accounts for their success

b) Literacy Rankings:

Bangladesh is far behind other nations. Literacy is a starting point for the development of the basic skills required just to enter the ICTES entry level training.

Country	Literacy rate
Bangladesh	51.3%
Philippines	94.8%
China	82.8%
Thailand	95.0%
Malaysia	86.4%

Source: several statements of the Bangladesh literacy rate are published this is the highest figure the author has seen and comes from ITU Asia 2000 conference.

c) International Certification standards

A comparison of international standards used in the Philippines versus that of Bangladesh is as follows:

Int'l Standard	Bangladesh	Philippines
Vendor certification (Cisco, Microsoft, Oracle etc.)	Yes	Yes
International examinations (Japanese IT/Animation; Singapore Proj. Mgmt.)	No	Yes
Included in Consultant rankings (PERC, META group, Gartner Group etc.)	No	Yes
Included in expat perception rankings	No	Yes
University curriculum comparisons with N. America	Yes	Yes
Examination benchmarking with N. American	No	Yes
Internships/co-op programs	Some	Some

d) Challenges

Degree to which the following difficulties/challenges exist in each country:

Difficulty/Challenge	Bangladesh	Philippines	N. America
Recruitment of qualified faculty	High	High	Low
Retention of faculty	High	High	Low
Brain drain	High	High	Low
Under funding	High	High	Low
Upgrading of staff	High	High	Low
Facilities (labs etc.)	High	High	Low

4 RATE / LIKELIHOOD OF CHANGE

4.1 General

Bangladesh has significant challenges in developing a competitive ICTES workforce but it also is making some significant steps in the right direction

4.2 Positive developments

- ICT task force in conjunction with private sector defining skill sets required, enrolment numbers and projected demand in conjunction
- Private sector making recommendations on required curriculum
- Some minimal internships / co-operative education opportunities supported by private sector
- Move by some training institutions to offer international vendor certification courses
- Some franchise training institutes providing internationally recognized curriculum, some ISO9000 certified (caveat concerning quality of instructors)
- Private sector providing on the job training (OJT) in line with their needs
- TechBangla facilitating NRB train the trainer sessions

4.3 Challenges

- Funding for education at primary / secondary level
- Recruitment and retention of qualified teachers
- Proper utilization of training institutes while maintaining consumer confidence
- Infrastructure limitations resulting in low teledensity and low internet diffusion
- Low literacy, computer literacy rate
- Lack of basic skills
- Lack of sufficient English language proficiency

5 RECOMMENDATIONS

5.1 General

The following recommendations are based on the analysis of data gathered during this mission. It should be noted that there are many reports prepared by various stakeholders making similar recommendations.

5.1.1 Seek Recognition through International Standards

The Bangladesh workforce is in effect part of the product which the ICTES initiatives seek to export to the world. The customer will look for some international standard by which to evaluate that workforce. (See section 3.3) Over time the workforce will demonstrate by its performance on the job the quality of the human resources but the initial buying decision will be based on external not internal measures. It is therefore recommended that metrics on the following standards be maintained:

- Vendor certifications
- Results on internationally recognized exams
- Affiliations with internationally recognized Universities
- Survey rankings

This information will not only serve to make resource decisions for further education and training but will also serve as an element of Bangladesh ICTES marketing. This type of information has been used in the marketing efforts in the Philippines.

It is too early to expect Bangladesh to score well on consultant survey rankings- this should be a mid term goal. Initially Universities and training Institutes must increasingly focus on standards that will be recognized by the international customer. It is interesting to note that at least one University had a requirement that faculty be foreign educated – a subtle understatement of the qualifications of its own graduates.

5.1.2 The private sector should clearly identify it's needs so that educational institutions can respond appropriately.

It is important that the private sector make known its needs for human resources in various skill areas. It will then fall to the training institutes to respond. In a fast changing technological world it can be expected that the technology and business needs will change too quickly for training institutes to respond immediately. However a close relationship will allow scarce resources to be directed where they are most needed. The efforts of the private sector, IPS Association, BCS etc. to make known their requirements is well placed provided educational institutions are in a position to respond. The rate of change and evolving business needs make it inadvisable for government to prescribe a curriculum of study other than in broad terms. To do so may mean resources are expended in a subject area which is out of date.

5.1.3 Continue with the work of the ICT Task Force in defining skill deficiencies and supply/demand numbers.

The work of Prof. J.R.Choudhury and his team in defining skill deficiencies and numbers of students enrolment and projection of demand is a necessary first step. It is essential that this type of analysis be done and further refined as competitive market segments are identified by Bangladesh private sector. One can always take issue with the 'target' numbers but these can be refined as the realities of the market place become evident.

5.1.4 Internships / work experience programs

Part of the demonstration of a highly skilled ICTES workforce comes from performance on the job. In preparation work experiences as part of the training and education of ICTES professionals should be provided. Many North American academic programs require students to have mandatory private sector work placements. This ensures that the student has a feel for the 'real world' and gains valuable work experience which is a benefit both to the student and to the private sector. Such programs also ensure closer communication between training institutes of all kinds and the private sectors keeping both sectors current on the needs and limitations of the other.

5.1.5 Increased funding for education at all levels

According to the UNDP '…education is one of the major foundations for economic competitiveness…'. It needs to be emphasised that a strong base of literate, computer literate students with solid basic skills is the entry point into ICTES training and the workforce.

It was pointed out to us that funding at the University level did not necessarily follow the enrolment numbers. In an environment where rapid expansion is desired it is critical that resources for the educational sector match enrolment targets otherwise already stretch resources are stretched further resulting in a decrease in quality.

The private sector can play a role here as in North America where the private sector sees an economic benefit in supporting educational institutions with facilities, work placement opportunities, expertise and advice.

5.1.6 Provide a mechanism to allow consumers of private training institutes to make informed decisions.

Criticism of quality of training is a serious issue. It is recommended that a consumer awareness program which provides students the information to select a training institute conforming to industry minimum standards. Typically in emerging sectors the 'pioneers' in the sector are followed by numerous other entrants attempting to copy the success of the early entrants. It is in the interest of the industry to define standards for itself that will gain public confidence. It falls to the pioneers and professional Training Institutes (some of which are ISO9000 certified) attempting to produce a quality product to help set these standards. Institutes not providing value eventually become known to the public or do not gain recognition within the industry.

It should be noted that the proliferation of training institutes some of which provide little value for the money expended is not a unique problem to Bangladesh. It happens in both developing and developed nations. While some government control is attempted in various countries the education of the consumer public and the definition by the industry of minimum standards is most effective in targeting low value vendors while encouraging the high value vendors to provide necessary training to the growing ICTES sector. Typically this is done by initiating consumer awareness programs.

Typically such consumer awareness programs might provide knowledge of selection criteria such as :

- Internationally recognized curriculum
- International vendor certification program
- Existence of a computer lab
- Minimum hours of study
- Minimum hours of lab work
- Internship programs
- List of faculty and their qualifications

It is recommended that a Training Association is in the best position to prepare such a check list. The experience in other nations is that Government involvement is not as effect and adds a level of administrative overhead to both the government and the private sector training institutions some of which are providing value. The observation here is that expectations of employment through ICTES have been raised to the extent that students will invest hard earned Taka on the hope of employment. One training institute quoted a job placement rate of one in six.

5.1.7 Facilitate the creation of Training Institution Association.

Associations of member organizations similar to BCS and the ISP association can play a valuable role in creating standards, giving accreditation to its members, helping to upgrade the skill levels of all faculty and creating a consumer awareness criteria for Training Institutes. Such an association could work with other private sector firms.

5.2 Short term potential

These recommendations can be implemented in a short time frame with minimal capital investment.

Recommendation	Impact	Who
Seek Recognition through International Standards	demonstrates to customer quality of ICT human resources requires training institutes to raise quality to reach standard	private sector, training institutes
Continue with the work of the ICT Task Force in defining skill deficiencies and supply/demand numbers.	necessary process to define business skill level requirements provides educational institutions with valuable information	ICT, private sector, training institutes
The private sector should clearly identify it's needs so that educational institutions can respond appropriately.	allows educational institutes to direct resources where they are most needed	private sector
Internships / work experience programs	provides valuable work experience part of international standard aids communication between educational institutions and private sector	private sector / educational institutes
Facilitate the creation of Training Institution Association.	allow sharing of information develop professional standards develop consumer awareness programs aid in teacher upgrade and development	training institutes
Provide a mechanism to allow consumers of private training institutes to make informed decisions.	consumer awareness programs developed by the private sector will place monitoring of quality in the hands of consumers , armed with appropriate information	training institutes, private sector, consumers

5.3 Long term potential

These recommendations will require a long-term commitment and/or a large capital investment.

Recommendation	Impact	Who
Increased funding for education at all levels	provides needed capacity for hoped for growth in ICTES addresses quality of education issues addresses some equity issues builds base of next generation graduates	GOB

6 INTERVIEWS

The author wishes to thank the following individuals who provided input through personal interviews.

Name	Organization
Md. Akhtaruzzaman Manju	Aftab IT Ltd. /ISP Association
Mohd. Parvez Reza	Aftab IT Limited
Taneem M. R. Islam	DataSoft Systems Bangladesh Limited
Shaikh Mizan	TechhBangla
S. M. Iqbal	Information Services Network Ltd.
Dewan A.H. Alamgir	USAID
Badruddoza Haider Chowdhury	JOBS
Dr. M. Abdul Awal	North South University
Abu Saeed Khan	Journalist
Karar Mahmudul Hassan	Secretary Ministry of Science and Information Technology
Golam Mostafa	Delta Computer Engineering
Dr. Zelal Shafi	EtherNet Computer
Russell T. Ahmed	Global on line
Md. Monirul Islam	Computer Services
Md. Abul Bashar Khan	APTEC
Shaik Abu Reza	ATI Ltd.
Professor Jamilur R. Choudhury	BRAC University
Mohammad Arifur Rahman	ATI Center
Md. Abul Kashem Mia	Bangladesh University of Science and Engineering
Abul L. Haque	North South University
Professor Hafiz G. A. Siddiqi	North South University
Monjur Ahmed Chowdhury	win2win Technologies Limited
Allen Fleming	USAID
Deborah Llewellyn	USAID
Md. Nurul Islam	ConnectBD Ltd.
Ahmed Lumat	Apollo Technologies
Mehedi Zaman Talukdar	Computer Source Ltd.
Hussaini Fakhri	in2it Interactive Ltd.
Imtiaz Ahmed Rizvi	Institute of Business Administration & I T
T.I.M. Nurul Kabir	TechnoVista Limited
Abir Mallick	WEBCOM Limited
Sharif N. Ambia	Technosoft Transcription Limited
Russell T. Ahmed	GLOBAL Online
Dr. Ashraf-ul-Moyez	DNS Telemedicine Ltd
Shaikh Mizan	TechBanlga